



Australian Government

**Patent Office  
Canberra**

I, LEANNE MYNOTT, MANAGER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003906503 for a patent by GRAM ENGINEERING PTY LTD as filed on 24 November 2003.



WITNESS my hand this  
Seventh day of December 2004

LEANNE MYNOTT  
MANAGER EXAMINATION SUPPORT  
AND SALES

**BEST AVAILABLE COPY**

AUSTRALIA  
Patents Act 1990

**PROVISIONAL SPECIFICATION**

**Applicant:**

GRAM ENGINEERING PTY LTD

**Invention Title:**

PLINTH

The invention is described in the following statement:

## Plinth

### Field of the Invention

The invention relates to fencing and more specifically to fence elements, known as plinths, used at the base of a fence construction. The invention has been developed especially, but not exclusively, for metal fencing systems and is herein described in that context. It is to be appreciated however, that the invention has broader application and is not limited to that use.

### 10 Background

It is often desirable in the construction of fences to have the fence closely follow the contour of the surrounding landscape. Such an arrangement inhibits noise, vermin, wind, etc from passing under the fence.

15 To allow the fence to follow the ground contour, in the past plinths have been installed under the main infill panel. These plinths are typically constructed from timber and are either independently supported in the ground or secured to the fence posts. The plinths may be partially embedded in the ground and as such, are also often used to retain soil where the ground level is uneven.

20 Timber planks have been used extensively to construct plinths as they have sufficient strength to retain soil, and they can be relatively easily cut to size on site. However, the timber is usually chemically treated to make it 25 resistant to pests, such as termites, and there is a tendency for these chemicals to leach into the soil. As these chemicals are highly toxic, this can lead to unacceptable contamination of the surrounding environment. 30 Also timber plinths are relatively bulky and heavy which give rise to handling and installation difficulties.

### Summary of the Invention

According to a first aspect, the invention relates to a plinth for use in a fencing system of the type comprising two spaced apart posts, and a barrier panel extending between and mounted to the posts, the plinth being formed from sheet material having spaced apart edge margins and being profiled to incorporate stiffening formations that extend along the sheet between the edge margins.

In a preferred form, the edge margins are mountable to the posts.

In a preferred form, the plinth is made from sheet metal that incorporates a protective coating, such as that provided by a Zn/Al alloy coating.

In one form, the stiffening formations may be corrugations or ribs such that a cross-sectional profile of the plinth displays a regular wave form with crests and troughs displaced from a notional centre plane of the sheet. The wave form may be smoothly curved throughout, or it may comprise straight portions intersecting at relatively abrupt angles, or a combination of both these possibilities.

In another form, the stiffening formations may be in the form of one or more ribs and adjacent pans that extend across the sheet.

In yet another form, the sheet material may be shaped or folded to form a structural section such as a z or c-section to provide for stiffening of the plinth.

In one form, the posts of the fence include respective channels that face towards one another and wherein in use the edge margins locate within the channels and are secured thereto. In another form, the edge margins extend across an outer surface of the posts.

In a particularly preferred form, the sheet is profiled to extend laterally out of a notional centre plane

extending between the upper and lower margins so that the edge margins of the plinth locate snugly within the channels of the fence.

In yet a further aspect, the invention relates to a  
5 plinth for use in a fencing system of the type comprising  
two spaced apart posts that include respective channels that  
face toward one another, and a barrier panel extending  
between and mounted to the posts, the plinths being formed  
from sheet material having spaced apart upper and lower  
10 longitudinal edges, and being profiled to extend laterally  
out of a notional centre plane extending between the upper  
and lower edges so that in use the edge margins of the  
plinth locate snugly within the channels.  
15

A plinth in accordance with the second aspect of the  
invention may also be profiled so as to incorporate at least  
one stiffening formation that is characteristic of the  
first aspect of the invention.

In accordance with the second aspect, the plinth may  
be profiled primarily so as to locate snugly within the  
20 channel to facilitate positioning of the plinth within the  
fence system.

In the second aspect, the sheet materials may be  
profiled so that the plinth forms a partially closed section  
having opposite side walls interconnected by a bridging  
25 portion. In this arrangement, the side walls are spaced  
apart at least along a portion of their width so as to  
locate snugly against the side walls of the channel. The  
plinth may be shaped with the bridge portion being linear,  
curved or sharply angled.

30 In one form, the edge margins of the plinths are  
spaced from the base portion of the fence post channel to  
allow the plinth to be manipulated into, and out of,

register with the channels when the barrier panel is in place.

Forming the plinth from sheet material provides enhanced flexibility in the design of the fence construction 5 as compared to the traditional timber plinths. The choice of profile on the plinth may be designed to match the expected design loading which is anticipated for the fence construction. The plinth is easier to handle as it is lightweight and can be stacked with other plinths in a 10 nested arrangement for ease of transporting. By making the plinth form a ZnAl alloy coated sheet metal, it will not leach dangerous chemicals into the soil as in the case of plinths formed from treated timber.

Also in a preferred form of the invention, the plinth 15 may be installed or removed after installation of the balance of the fence thereby further improving the flexibility of the design. Finally, the provision of the plinth, separate to the barrier panel, ensures that the incorporation of the plinth does not compromise the life of 20 the other portions of the fence.

According to a further aspect, the present invention provides a fencing system comprising two spaced apart posts, a barrier panel extending between and mounted to the posts, and a plinth located below the barrier panel, wherein the 25 posts include respective channels that face towards one another, and the plinth is formed from sheet material having spaced apart edge margins which are located within the channels and mounted thereto, the sheet being profiled to incorporate a stiffening formation that extends along the 30 sheet between the posts.

In yet a further aspect, the invention relates to a fencing system comprising of two spaced apart posts, a barrier panel extending between and mounted to the posts,

and a plinth located below the barrier panel, wherein the posts includes respective channels that face toward one another, and the plinth is formed from sheet material having spaced apart upper and lower longitudinal edges, the sheet 5 being profiled to extend laterally out of a notional centre plane extending between the upper and lower edges so that the edge margins of the plinth locate snugly within the channels.

Typically, each barrier panel comprises upper and 10 lower rigid rails, and infill means extending from rail to rail. Infill means may be an impervious rigid sheet, a roll formed profile sheet, a rigid sheet of expanded sheet of expanded metal, a plurality of spaced apart pickets, a sheet of woven wire mesh or other substantially planar obstruction 15 to the passage of people or animals between the posts.

The above features and advantages of the present invention will become more apparent from the following description when taken in conjunction with the accompanying drawings in which preferred embodiments of the present 20 invention are shown by way of illustrative example.

#### **Brief Description of the Drawings**

In the Drawings:

Figure 1 as a schematic perspective view of a fence;

Figure 2 is a perspective view of a plinth used in the fence 25 of Fig. 1;

Figure 3 is an end view of the plinth of Fig. 2;

Figure 4 is a section view along section line IV-IV of Fig. 1;

Figure 5 is an end view of a plinth with an alternative 30 profile; and

Figure 6 is an end view of a plinth with another alternative profile;

Figure 7 is an end view of a plinth with yet another alternative profile.

**Detailed Description of the Drawings**

Figure 1 shows a perspective view of a fencing system  
5 10. The fencing system includes an end post 12 and intermediate post 14. Both the end post 12 and the intermediate post are typically set in a concrete foundation  
16. Both posts are formed from composite sections with the end post 12 being formed from a square section 18 and a c-section 20 whereas the intermediate post includes oppositely disposed c-sections 22. The channels 24 of adjacent posts face one another so that they can receive a barrier panel 26 and plinth 28.

Each panel 26 includes a top and bottom rail (30, 32),  
15 and an infill panel 33. The infill panel may be formed as an impervious rigid sheet, a roll formed profiled sheet, a sheet of expanded metal pickets, woven wire mesh or the like.

In accordance with standard practice, the bottom rail  
20 32 is disposed above the ground level. This is required as many proprietary fencing system warranties are avoided if the barrier panel is in contact with the ground. However it is often desirable to extend the fence to the ground to inhibit noise, vermin, wind and the like from passing under  
25 the fence. Also if the ground level is uneven, it may be beneficial to incorporate a panel with sufficient strength to act as a retaining wall at the lower end of the fence.

To this end, the plinth 28 is arranged to be mounted below the barrier panel 26 and is mounted to and supported  
30 by the fence posts 12, 14.

In traditional fence construction, the plinth 28 is formed from timber. However in the embodiment shown, and as best illustrated in Figs. 2 and 3, the plinth 28 is formed

from a profiled metal sheet. The metal sheet is pre-coated with a corrosive resistant Zn/Al metal alloy and incorporates a painted overlay which typically matches the colour of the fence posts and barrier panels.

5       The plinth 28 includes an upper and lower longitudinal edge (34, 36) and opposite side margins (38, 40) which interconnect the longitudinal edges (34, 36). The plinth is typically profiled in continuous lengths and cut to size. With this arrangement the plinth includes stiffening  
10 formations 42 which extend linearly along the sheet between the edge margins (38, 40).

In the illustrated form of Figs. 2 and 3, the plinth 28 is profiled so that the stiffening formations 42 are in the form of angular corrugations that display a regular wave  
15 form with crests 44 and troughs 46 displaced from a notional centre plane CL that extends between the upper and lower longitudinal edges (34, 36). Each of the longitudinal edges (34, 36) also include a safety edge at their terminal end 48 that provides a safe edge for handling of the plinth 28 and  
20 can avoid additional costs in production of the plinth by removing the requirement to de-burr the edges.

The profile of the plinth 28 has substantial practical benefit. In particular, the stiffening formations 42 extend linearly between the edge margins (38, 40) and thereby  
25 increase the strength of the sheet to resist outward bowing from the plane on the fence. As such, the stiffening formation improve the strength of the sheet to resist back loading on the plinth 28 thereby allowing it to function at least to a limited extent as a retaining wall. In addition,  
30 the corrugated profile of the plinth allow some adjustment in its height by onsite expansion or compression of the profile. In addition, by having the profile extend outwardly from the notional centre plane end of the sheet

allows it to fit more snugly within the fence post channels 24 as disclosed in more detailed below with reference to Fig. 4.

As illustrated in Fig. 4, the plinth 28 locates within 5 the channels 24 of the fence posts (12, 14). Because of the profile of the plinth, the crests 44 of the plinth are designed to be in close proximity with the side walls (50, 52) of the c-sections which define the channels 24. With 10 this arrangement, the edge margins (38, 40) can be easily secured to the fence posts by mechanical fasteners, such as self tapping screws 54 which extend through the channel walls (50, 52) and into the plinth 28 through the crests 44. This arrangements allows for the plinth to be generally centrally located within the channels.

15 In addition, as best illustrated in Fig. 4, the plinth 28 is sized to be smaller than the distance between the webs 56 of the channels, so that the edge margins (38, 40) of the plinth 28 are spaced from the webs 56. By providing this space it allows the plinth to be removed or inserted more readily from the fence posts channels 24 without requiring removal of the barrier panel 26.

Figs. 5 to 7 illustrate variations on the plinth profile. Similar to the first embodiment, the plinth is formed from continuous lengths of sheet metal.

25 In the arrangement of Fig. 5, the plinth is formed with a z profile with the upper and lower flanges (60, 62) forming the upper and lower edges (34, 36) respectively of the plinth, and the web 64 extending diagonally from opposite edges of the flanges (60, 62). The z section 30 profile of the plinth 28 shown in Fig. 5 provides stiffening of the sheet to resist outward bowing.

Figs. 6 and 7 illustrate a further embodiment of the plinth which is formed as a channel section having opposite

side walls (70, 72) interconnected by a bridging portion 74. In this embodiment, the bridging portion 74 forms the upper edge 34 of the plinth 28 whereas the terminal ends 76 form the lower edge 36 of the plinth 28. In the embodiment of Fig. 6, the side walls (70, 72) taper towards each other so that the bridging portion 74 is angular. In contrast, the arrangement in Fig. 7, the walls (70, 72) are generally parallel along the majority of their length with the bridging portion 74 being arcuate. Whilst the arrangements in Figs. 6 and 7 do not provide significant enhanced stiffening to outward bowing of the plinth, they allow the plinth 28 to fit snugly within the channels 24 of the fence posts and also provide a uniform external appearance on both sides of the plinth thereby increasing the aesthetic appeal of the plinth.

In the claims which follow and in a proceeding summary of the invention, except where the concept requires otherwise due to expressed language or necessary implication, the word "comprising" and grammatical variations thereof, is used in an inclusive sense, that is the features specified may be associated with further features in various embodiments of the invention.

It is appreciated that is the variation and modifications may be made to the parts previous described without departing from the spirit or ambit of the invention.

**Claims**

1. A plinth for use in a fencing system of the type comprising two spaced apart posts, and a barrier panel extending between and mounted to the posts, the plinth being formed from sheet material having spaced apart edge margins and being profiled to incorporate stiffening formations that extend along the sheet between the edge margins.
- 5 2. A plinth as claimed in claim 1, wherein the sheet is sheet metal.
- 10 3. A plinth as claimed in claims 1 or 2, wherein the stiffening formations are corrugations or ribs such that a cross-sectional profile of the plinth displays a regular wave form with crests and troughs displaced from a notional centre plane of the sheet.
- 15 4. A plinth as claimed in claim 1 or 2, wherein the stiffening formations are in the form of one or more ribs and adjacent pans that extend across the sheet.
5. A plinth as claimed in claims 1 or 2, wherein the plinth is profiled to form a structural section such as a z or c-section to provide the stiffening formations.
- 20 6. A plinth as claimed in any preceding claims, wherein the posts of the fence include respective channels that face towards one another and wherein in use the edge margins of the plinth locate within the channels and are secured thereto.
- 25 7. A plinth as claimed in claim 6, wherein the sheet is profiled to extend laterally out of a notional centre plane so that the edge margins of the plinth locate snugly within the channels of the fence.
- 30 8. A plinth for use in a fencing system of the type comprising two spaced apart posts that include respective channels that face toward one another, and a barrier panel extending between and mounted to the posts, the plinths

- being formed from sheet material having spaced apart upper and lower longitudinal edges, and being profiled to extend laterally out of a notional centre plan extending between the upper and lower edges so that in use the edge margins of  
5 the plinth locate snugly within the channels.
9. A plinth as claimed in claim 8, wherein the sheet material is profiled so that the plinth forms a partially closed section having opposite side walls interconnected by a bridging portion.
- 10 10. A plinth as claimed in any preceding claim, wherein the edge margins of the plinth are spaced from at least one web of the fence post channels to allow the plinth to be manipulated into, and out of, register with the channels when the barrier panel is in place.
- 15 11. A fencing system comprising two spaced apart posts, a barrier panel extending between and mounted to the posts, and a plinth located below the barrier panel, wherein the posts include respective channels that face towards one another, and the plinth is formed from sheet material having spaced apart edge margins which are located within the channels and mounted thereto, the sheet being profiled to incorporate a stiffening formation that extends along the sheet between the posts.
- 20 12. A fencing system comprising of two spaced apart posts, a barrier panel extending between and mounted to the posts, and a plinth located below the barrier panel, wherein the posts includes respective channels that face toward one another, and the plinth is formed from sheet material having spaced apart upper and lower longitudinal edges, the sheet being profiled to extend laterally out of a notional centre plane extending between the upper and lower edges so that the edge margins of the plinth locate snugly within the channels.  
30

- 13 -

13. A fencing system as claimed in claims 11 or 12,  
wherein the barrier panel comprises upper and lower rigid  
rails, and infill means extending from rail to rail.

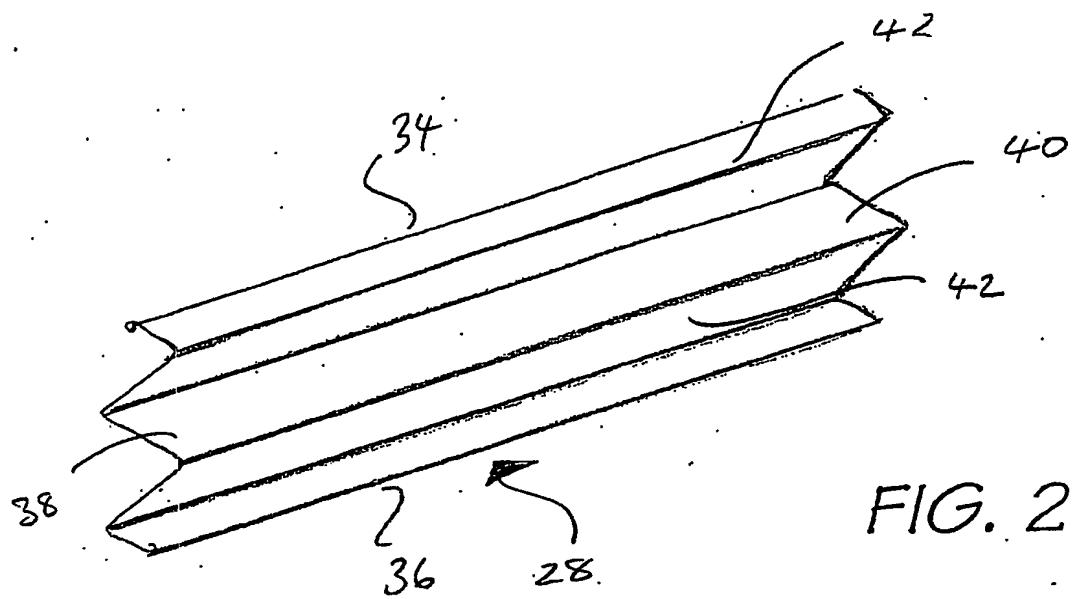
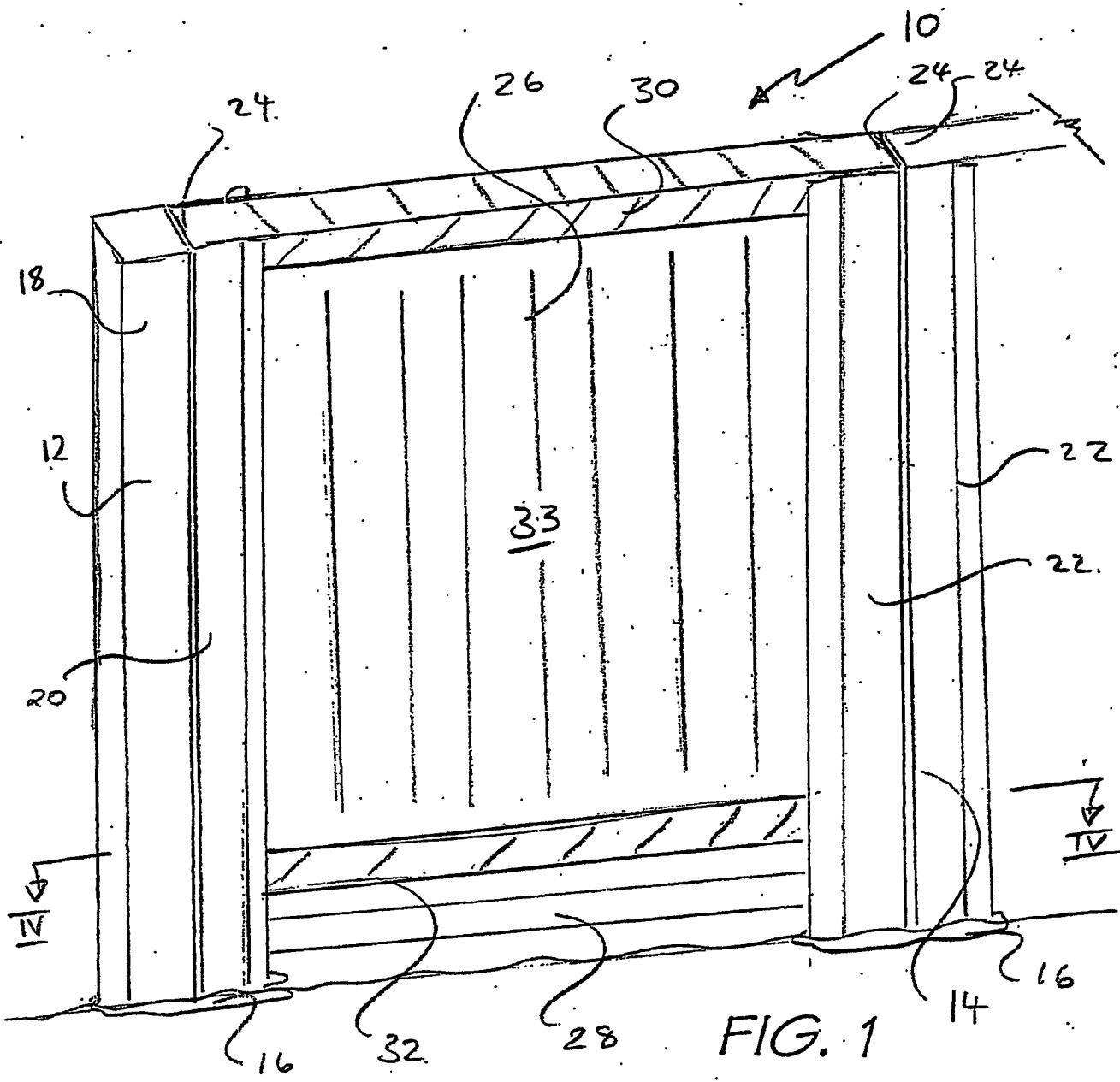
5 Dated this 24th day of November 2003

BHP STEEL LIMITED

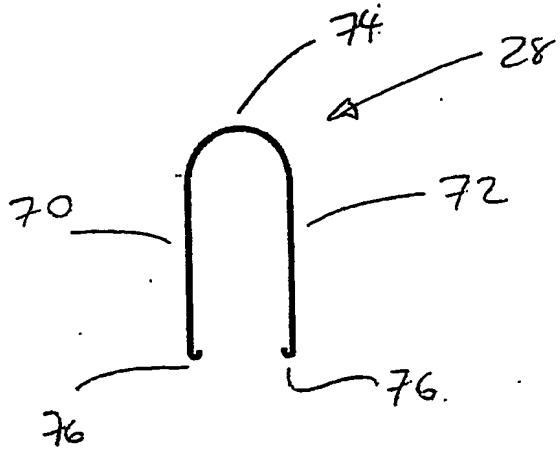
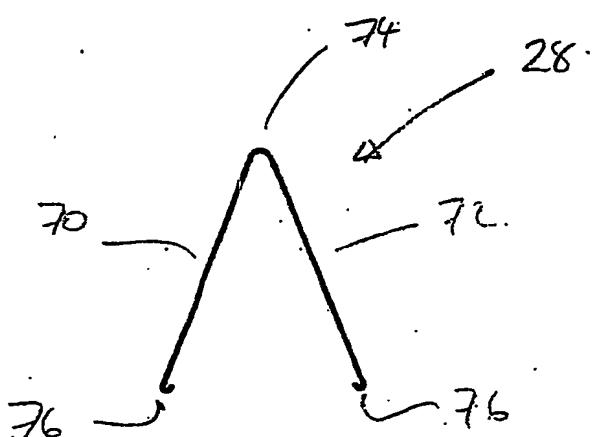
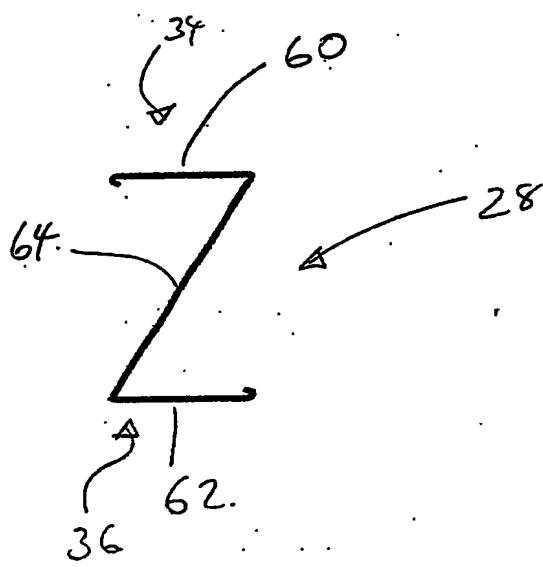
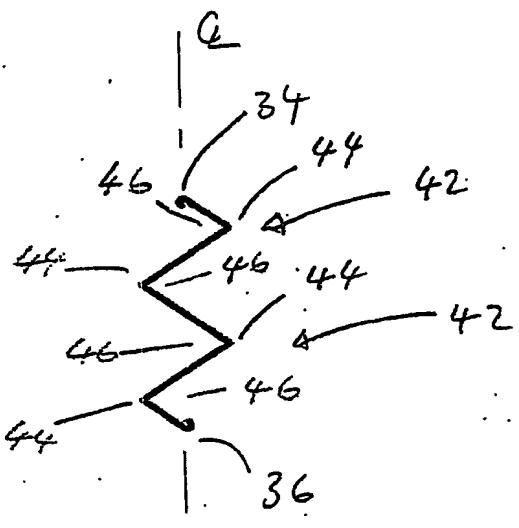
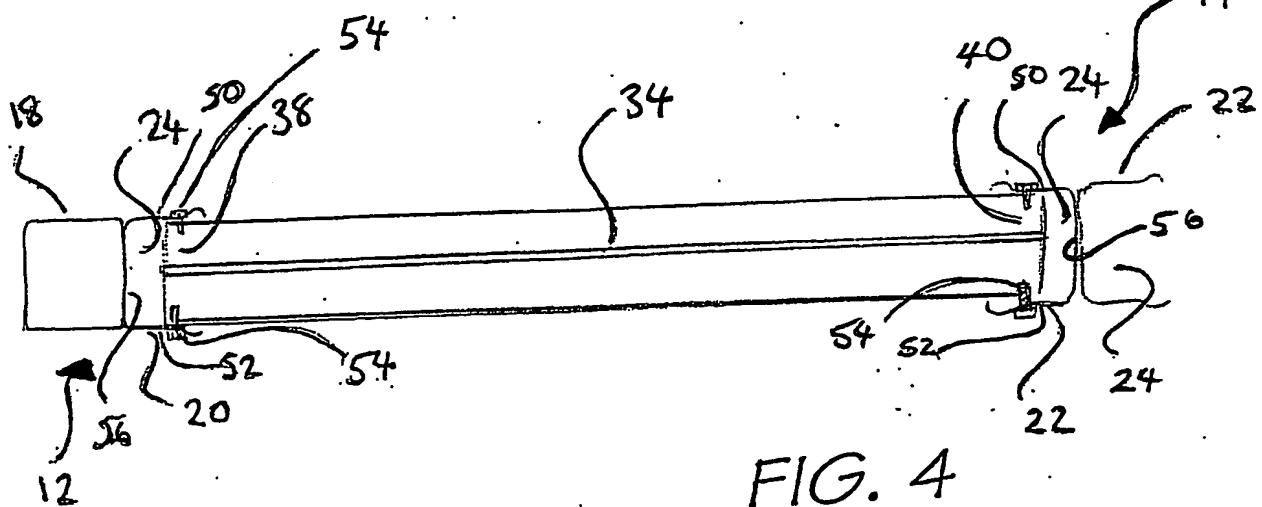
By their Patent Attorneys

GRIFFITH HACK

1/2



212



# **Document made available under the Patent Cooperation Treaty (PCT)**

International application number: PCT/AU04/001640

International filing date: 24 November 2004 (24.11.2004)

Document type: Certified copy of priority document

Document details: Country/Office: AU  
Number: 2003906503  
Filing date: 24 November 2003 (24.11.2003)

Date of receipt at the International Bureau: 13 December 2004 (13.12.2004)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)



World Intellectual Property Organization (WIPO) - Geneva, Switzerland  
Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record.**

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

**BLACK BORDERS**

**IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**

**FADED TEXT OR DRAWING**

**BLURRED OR ILLEGIBLE TEXT OR DRAWING**

**SKEWED/SLANTED IMAGES**

**COLOR OR BLACK AND WHITE PHOTOGRAPHS**

**GRAY SCALE DOCUMENTS**

**LINES OR MARKS ON ORIGINAL DOCUMENT**

**REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**

**OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**